Union Calendar No.

109TH CONGRESS
2D SESSION

H. R. 5356

[Report No. 109–]

To authorize the National Science Foundation and the Department of Energy Office of Science to provide grants to early career researchers to establish innovative research programs and integrate education and research, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

MAY 11, 2006

Mr. MCCAUL of Texas (for himself, Mr. BOEHLERT, Mr. SMITH of Texas, Mr. CALVERT, Mr. EHLERS, Mrs. BIGGERT, Mr. INGLIS of South Carolina, and Mr. SCHWARZ of Michigan) introduced the following bill; which was referred to the Committee on Science

JUNE --, 2006

Reported with amendments, committed to the Committee of the Whole House on the State of the Union, and ordered to be printed

[Strike out all after the enacting clause and insert the part printed in italic]

[For text of introduced bill, see copy of bill as introduced on May 11, 2006]

A BILL

To authorize the National Science Foundation and the Department of Energy Office of Science to provide grants to early career researchers to establish innovative research programs and integrate education and research, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Research for Competitiveness Act".

SEC. 2. NATIONAL SCIENCE FOUNDATION EARLY CAREER AWARDS FOR SCIENCE AND ENGINEERING RESEARCHERS.

(a) IN GENERAL.—The Director of the National Science Foundation shall carry out a program to award grants to scientists and engineers at the early stage of their careers at institutions of higher education and organizations described in subsection (c)(2) to conduct research in fields relevant to the mission of the Foundation. The existing Faculty Early Career Development (CAREER) Program may be designated as the mechanism for awarding such grants.

(b) SIZE AND DURATION OF AWARD.—The duration of awards under this section shall be 5 years, and the amount per year shall be at least $80,000.

(c) ELIGIBILITY.—Award recipients shall be individuals who are employed in a tenure-track position as an assistant professor or equivalent title, or who hold an equivalent position, at—

(1) an institution of higher education in the United States; or

(2) an organization in the United States that is a nonprofit, nondegree-granting research organization such as a museum, observatory, or research laboratory.

(d) SELECTION.—Award recipients shall be selected on a competitive, merit-reviewed basis.

(e) SELECTION PROCESS AND CRITERIA FOR AWARDS.—An applicant seeking funding under this section shall submit a proposal to the Director at such time, in such manner, and containing such information as the Director may require. In evaluating the proposals submitted under this section, the Director shall consider, at a minimum—

(1) the intellectual merit of the proposed work;

(2) the innovative or transformative nature of the proposed research;

(3) the extent to which the proposal integrates research and education, including undergraduate education in science and engineering disciplines; and

(4) the potential of the applicant for leadership at the frontiers of knowledge.

(f) AWARDS.—In awarding grants under this section, the Director shall endeavor to ensure that the recipients are

from a variety of types of institutions of higher education and nonprofit, nondegree-granting research organizations. In support of this goal, the Director shall broadly disseminate information about when and how to apply for grants under this section, including by conducting outreach to Historically Black Colleges and Universities that are part B institutions as defined in section 322(2) of the Higher Education Act of 1965 (20 U.S.C. 1061(2)) and minority institutions (as defined in section 365(3) of that Act (20 U.S.C. 1067k(3))).

(g) AUTHORIZATION OF APPROPRIATIONS.—For each of the fiscal years 2007 through 2011, the Director shall allocate at least 3.5 percent of funds appropriated to the National Science Foundation for Research and Related Activities to the grants program under this section.

(h) REPORT.—Not later than 6 months after the date of enactment of this Act, the Director shall transmit to the Committee on Science of the House of Representatives and to the Committee on Commerce, Science, and Transportation of the Senate a report describing the distribution of the institutions of the awardees of the Faculty Early Career Development Program since fiscal year 2001 among each of the categories of institutions of higher education defined by the Carnegie Foundation for the Advancement of Teaching and the organizations in subsection (c)(2).

(i) EVALUATION.—Not later than 2 years after the date of enactment of this Act, the Director shall transmit to the Committee on Science of the House of Representatives and to the Committee on Commerce, Science, and Transportation of the Senate a report evaluating the impact of the Faculty Early Career Development Program on the ability of young faculty to compete for National Science Foundation research grants.

SEC. 3. DEPARTMENT OF ENERGY EARLY CAREER AWARDS FOR SCIENCE AND ENGINEERING RESEARCHERS.

(a) IN GENERAL.—The Director of the Office of Science of the Department of Energy shall carry out a program to award grants to scientists and engineers at the early stage of their careers at institutions of higher education and organizations described in subsection (c)(2) to conduct research in fields relevant to the mission of the Department.

(b) SIZE AND DURATION OF AWARD.—The duration of awards under this section shall be up to 5 years, and the amount per year shall be at least $80,000.

(c) ELIGIBILITY.—Award recipients shall be individuals who are employed in a tenure-track position as an assistant professor or equivalent title, or who hold an equivalent position, at—

(1) an institution of higher education in the United States; or

(2) an organization in the United States that is a nonprofit, nondegree-granting research organization such as a museum, observatory, or research laboratory.

(d) SELECTION.—Award recipients shall be selected on a competitive, merit-reviewed basis.

(e) SELECTION PROCESS AND CRITERIA FOR AWARDS.—An applicant seeking funding under this section shall submit a proposal to the Director at such time, in such manner, and containing such information as the Director may require. In evaluating the proposals submitted under this section, the Director shall consider, at a minimum—

(1) the intellectual merit of the proposed work;

(2) the innovative or transformative nature of the proposed research;

(3) the extent to which the proposal integrates research and education, including undergraduate education in science and engineering disciplines; and

(4) the potential of the applicant for leadership at the frontiers of knowledge.

(f) COLLABORATION WITH NATIONAL LABORATORIES.—In awarding grants under this section, the Direc-

tor shall give priority to proposals in which the proposed work includes collaboration with the Department of Energy National Laboratories.

(g) AWARDS.—In awarding grants under this section, the Director shall endeavor to ensure that the recipients are from a variety of types of institutions of higher education and nonprofit, nondegree-granting research organizations. In support of this goal, the Director shall broadly disseminate information about when and how to apply for grants under this section, including by conducting outreach to Historically Black Colleges and Universities that are part B institutions as defined in section 322(2) of the Higher Education Act of 1965 (20 U.S.C. 1061(2)) and minority institutions (as defined in section 365(3) of that Act (20 U.S.C. 1067k(3))).

(h) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary of Energy to carry out the Director's responsibilities under this section $25,000,000 for each of the fiscal years 2007 through 2011.

(i) REPORT ON RECRUITING AND RETAINING EARLY CAREER SCIENCE AND ENGINEERING RESEARCHERS AT THE NATIONAL LABORATORIES.—Not later than 3 months after the date of enactment of this Act, the Director shall transmit to the Committee on Science of the House of Representatives and to the Committee on Energy and Natural

Resources of the Senate a report on efforts to recruit and retain young scientists and engineers at the early stages of their careers at the Department of Energy National Laboratories. The report shall include—

(1) a description of Department of Energy and National Laboratory policies and procedures, including financial incentives, awards, promotions, time set aside for independent research, access to equipment or facilities, and other forms of recognition, designed to attract and retain young scientists and engineers;

(2) an evaluation of the impact of these incentives on the careers of young scientists and engineers at Department of Energy National Laboratories, and also on the quality of the research at the National Laboratories and in Department of Energy programs;

(3) a description of what barriers, if any, exist to efforts to recruit and retain young scientists and engineers, including limited availability of full time equivalent positions, legal and procedural requirements, and pay grading systems; and

(4) the amount of funding devoted to efforts to recruit and retain young researchers and the source of such funds.

SEC. 4. REPORT ON NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY EFFORTS TO RECRUIT AND RETAIN EARLY CAREER SCIENCE AND ENGINEERING RESEARCHERS.

Not later than 3 months after the date of enactment of this Act, the Director of the National Institute of Standards and Technology shall transmit to the Committee on Science of the House of Representatives and to the Committee on Commerce, Science, and Transportation of the Senate a report on efforts to recruit and retain young scientists and engineers at the early stages of their careers at the National Institute of Standards and Technology laboratories and joint institutes. The report shall include—

(1) a description of National Institute of Standards and Technology policies and procedures, including financial incentives, awards, promotions, time set aside for independent research, access to equipment or facilities, and other forms of recognition, designed to attract and retain young scientists and engineers;

(2) an evaluation of the impact of these incentives on the careers of young scientists and engineers at the National Institute of Standards and Technology, and also on the quality of the research at the National Institute of Standards and Technology's laboratories and in the National Institute of Standards and Technology's programs;

(3) a description of what barriers, if any, exist to efforts to recruit and retain young scientists and engineers, including limited availability of full time equivalent positions, legal and procedural requirements, and pay grading systems; and

(4) the amount of funding devoted to efforts to recruit and retain young researchers and the source of such funds.

SEC. 5. NATIONAL SCIENCE FOUNDATION RESEARCH AWARD MATCH PROGRAM.

(a) IN GENERAL.—The Director of the National Science Foundation shall carry out a program to award grants on a competitive, merit-reviewed basis to scientists and engineers at the early stage of their careers at institutions of higher education and organizations described in subsection (c)(2) to conduct high-risk, high-return research. The program shall support fundamental research with the potential for significant scientific or technical advancement.

(b) SIZE AND DURATION OF AWARD.—

(1) BASE AWARD.—The duration of awards under this section shall be up to 5 years, and the amount per year shall be up to $75,000. The funding awarded under this paragraph shall not be contingent on the receipt of funds under paragraph (2).

(2) MATCHING AWARD.—Each year that a recipient is receiving funding under paragraph (1), the National Science Foundation shall match any funds the recipient receives from United States industry for work in the area described in the recipient's application for the award, up to an additional $37,500.

(c) ELIGIBILITY.—Applicants for awards under this section shall be individuals who are employed in a tenure-track position as an assistant professor or equivalent title, or who hold an equivalent position, at—

(1) an institution of higher education in the United States; or

(2) an organization in the United States that is a nonprofit, nondegree-granting research organization such as a museum, observatory, or research laboratory.

However, a recipient awarded a grant under this section may continue to receive funding under the grant regardless of whether the recipient has been granted tenure after the awarding of the grant.

(d) OUTREACH.—The Director shall broadly disseminate information about when and how to apply for grants under this section, including by conducting outreach to Historically Black Colleges and Universities that are part B institutions as defined in section 322(2) of the Higher Edu-

cation Act of 1965 (20 U.S.C. 1061(2)) and minority institutions (as defined in section 365(3) of that Act (20 U.S.C. 1067k(3))).

(e) APPLICATION.—Applicants for awards under this section shall submit to the Director—

(1) a curriculum vitae or resume, including a list of publications and a description of any activities demonstrating leadership or educational activities;

(2) a description of research areas of interest;

(3) letters of recommendation; and

(4) any other materials the Director requires.

(f) CRITERIA FOR AWARDS.—In establishing criteria for evaluation of applications for grants under this section, the Director shall include—

(1) the potential of the applicant for leadership at the frontiers of knowledge;

(2) the potential innovative or transformative nature of research in the areas of interest described in the application;

(3) the creativity of the applicant as determined by criteria set by the Director, including creativity demonstrated in past research activities; and

(4) the potential interest to industry of research in the areas of interest described in the application.

(g) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Director of the National Science Foundation to carry out this section—

(1) $3,000,000 for fiscal year 2007;

(2) $6,000,000 for fiscal year 2008;

(3) $9,000,000 for fiscal year 2009;

(4) $12,000,000 for fiscal year 2010; and

(5) $15,000,000 for fiscal year 2011.

SEC. 6. DEPARTMENT OF ENERGY RESEARCH AWARD MATCH PROGRAM.

(a) IN GENERAL.—The Director of the Office of Science of the Department of Energy shall carry out a program to award grants on a competitive, merit-reviewed basis to scientists and engineers at the early stage of their careers at institutions of higher education and organizations described in subsection (d)(2) to conduct high-risk, high-return research in areas related to energy production, storage, and use. The program shall support fundamental research with the potential for significant scientific or technical advancement.

(b) INVOLVEMENT OF DEPARTMENT OF ENERGY ORGANIZATIONS.—In carrying out this program, the Director shall consult with the research, development, demonstration, and commercial application programs of the Office of Nuclear Energy Research and Development, the Office of Fossil

Energy, and the Office of Energy Efficiency and Renewables.

(c) SIZE AND DURATION OF AWARD.—

(1) BASE AWARD.—The duration of awards under this section shall be up to 5 years, and the amount per year shall be up to $75,000. The funding awarded under this paragraph shall not be contingent on the receipt of funds under paragraph (2).

(2) MATCHING AWARD.—Each year that a recipient is receiving funding under paragraph (1), the Department of Energy Office of Science shall match any funds the recipient receives from United States industry for work in the area described in the recipient's application for the award, up to an additional $37,500.

(d) ELIGIBILITY.—Applicants for awards under this section shall be individuals who are employed in a tenure-track position as an assistant professor or equivalent title, or who hold an equivalent position, at—

(1) an institution of higher education in the United States; or

(2) an organization in the United States that is a nonprofit, nondegree-granting research organization such as a museum, observatory, or research laboratory.

However, a recipient awarded a grant under this section may continue to receive funding under the grant regardless of whether the recipient has been granted tenure after the awarding of the grant.

(e) OUTREACH.—The Director shall broadly disseminate information about when and how to apply for grants under this section, including by conducting outreach to Historically Black Colleges and Universities that are part B institutions as defined in section 322(2) of the Higher Education Act of 1965 (20 U.S.C. 1061(2)) and minority institutions (as defined in section 365(3) of that Act (20 U.S.C. 1067k(3))).

(f) APPLICATION.—Applicants for awards under this section shall submit to the Director—

(1) a curriculum vitae or resume, including a list of publications and a description of any activities demonstrating leadership or educational activities;

(2) a description of research areas of interest;

(3) letters of recommendation; and

(4) any other materials the Director requires.

(g) CRITERIA FOR AWARDS.—In establishing criteria for evaluation of applications for the grants awarded under subsection (a), the Director shall include—

(1) the potential for leadership at the frontiers of knowledge by the applicant;

(2) the potential innovative or transformative nature of research in the areas of interest described in the application;

(3) the creativity of the applicant as determined by criteria set by the Director, including creativity demonstrated in past research activities; and

(4) the potential interest to industry of research in the areas of interest described in the application.

(h) COLLABORATION WITH NATIONAL LABORATORIES.—In awarding grants under this section, the Director may give priority to applications in which the proposed work includes collaboration with the Department of Energy National Laboratories.

(i) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary of Energy to carry out the Director's responsibilities under this section—

(1) $2,000,000 for fiscal year 2007;

(2) $4,000,000 for fiscal year 2008;

(3) $6,000,000 for fiscal year 2009;

(4) $8,000,000 for fiscal year 2010; and

(5) $10,000,000 for fiscal year 2011.

SEC. 7. MAJOR RESEARCH INSTRUMENTATION.

(a) NATIONAL SCIENCE FOUNDATION PROGRAM.—Awards under the Major Research Instrumentation Pro-

gram described in section 13 of the National Science Foundation Authorization Act of 2002 shall range in amount between $100,000 and $20,000,000 and may be used to support the operations and maintenance of instrumentation and equipment acquired under the program.

(b) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation for this program, $94,200,000 for fiscal year 2007, $100,800,000 for fiscal year 2008, $107,800,000 for fiscal year 2009, $115,300,000 for fiscal year 2010, and $123,400,000 for fiscal year 2011.

SEC. 8. DONATIONS.

Section 11(f) of the National Science Foundation Act of 1950 (42 U.S.C. 1870(f)) is amended by inserting at the end before the semicolon ", except that funds may be donated for specific prize competitions".

SEC. 9. PROGRAM TO FOSTER CROSS-DISCIPLINARY RESEARCH.

(a) IN GENERAL.—The Director shall establish a program to award grants for long-term, potentially path-breaking, basic research designed to simultaneously advance the physical and nonbiomedical life sciences.

(b) MERIT REVIEW.—Grants shall be awarded under this section on a competitive, merit-reviewed basis. The Director shall ensure that review panels for proposals received

under this section include both physical scientists and non-biomedical life scientists, and, when appropriate, engineers. The Director shall ensure that review panels for proposals received under this section are open to approving high-risk research.

(c) AWARDS.—The Director may award grants under this section to individuals, groups, and centers. The Director shall ensure that some of the grants awarded under section 2 are awarded consistent with this section.

(d) APPLICATION AND SELECTION.—Applications for grants under this section shall be submitted to the Director at such time, in such manner, and containing such information as the Director may require. At a minimum, applications shall contain a brief description of how the proposed research will advance both the physical and nonbiomedical life sciences. In evaluating applications, the Director shall consider, at a minimum, how significantly the research would advance both the physical and nonbiomedical life sciences.

(e) OTHER AGENCIES.—The Director may carry out this program jointly with the Department of Energy Office of Science and other relevant Federal agencies.

(f) REPORT.—The documents prepared by the Director to accompany the annual Presidential budget submission

shall specify amounts to be expended on the program in this section.

SEC. 10. RESEARCH ON INNOVATION AND INVENTIVENESS.

In carrying out its research programs on science policy and on the science of learning, the National Science Foundation may support research on the process of innovation and the teaching of inventiveness.

SEC. 11. NASA'S CONTRIBUTION TO INNOVATION.

(a) SENSE OF THE CONGRESS.—It is the sense of the Congress that—

(1) a balanced science program as authorized by section 101(d) of the National Aeronautics and Space Administration Authorization Act of 2005 (Public Law 109–155) contributes significantly to innovation in and the economic competitiveness of the United States; and

(2) a robust National Aeronautics and Space Administration, funded at the levels authorized under sections 202 and 203 of that Act, would offer a balance among science, aeronautics, exploration, and human space flight programs, all of which can attract and employ scientists, engineers, and technicians across a broad range of fields in science, technology, mathematics, and engineering.

(b) PARTICIPATION IN INNOVATION AND COMPETITIVENESS PROGRAMS.—The Administrator of the National Aeronautics and Space Administration shall fully participate in any interagency efforts to promote innovation and economic competitiveness through scientific research and development within the spending levels cited in subsection (a).

SEC. 12. NASA WORKFORCE TRAINING.

(a) ESTABLISHMENT.—The Administrator of the National Aeronautics and Space Administration may establish a NASA Academy, which may be established as a virtual Academy using online learning techniques. The Academy, if established, shall be available to all employees of the National Aeronautics and Space Administration to facilitate increased knowledge of engineering and scientific principles to further the missions of the National Aeronautics and Space Administration.

(b) PURPOSE.—The purpose of the Academy is to provide a unique training program to bridge the gap between the broad-based training provided by universities and the specific training needed to understand the different technologies which form the basis for work at the National Aeronautics and Space Administration, as well as to update employees with the most current training available in the various skills and disciplines needed at the National Aeronautics and Space Administration.

(c) SUBMISSION OF PLAN.—Not later than 180 days after the date of enactment of this Act, the Administrator of the National Aeronautics and Space Administration shall transmit to the Committee on Science of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a notification of whether the National Aeronautics and Space Administration will establish an Academy as described in subsection (a). If an Academy is to be established, then concurrent with the notification, the Administrator shall transmit a plan for the establishment of the Academy.

SEC. 13. DEFINITIONS.

In this Act—

(1) the term ''institution of higher education'' has the meaning given such term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)); and

(2) the term ''National Laboratory'' has the meaning given the term ''nonmilitary energy laboratory'' in section 903(3) of the Energy Policy Act of 2005 (42 U.S.C. 16182(3)).

Amend the title so as to read: ''A bill to authorize the National Science Foundation and the Department of Energy Office of Science to provide grants to early career researchers to establish innovative research programs and

integrate education and research and to conduct high-risk, high-return research, and for other purposes.''.